



ESTABLISHED 1802

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POLYMER PRODUCTS DEPARTMENT
EXPERIMENTAL STATIONPERSONAL AND CONFIDENTIALcc: A. J. Dahl - 353
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L. J. Papa - 269
Pral File
I.C.Complainant's
Exhibit No. 54

July 16, 1981

DR. D. O. INSLEE
SPRUANCE TEXTILE FIBERS
RICHMOND, VA.ANALYSIS OF BLOOD SAMPLES FOR PERFLUOROOCTANOATE
(Job No. 811-601; PRAL Nos. 81-2244-2278; Notebook Nos. E22514, E26238)

As requested in your letter of 5/8/81 to L. J. Papa, the 35 blood samples submitted then have been analyzed for perfluorooctanoate (C_8). Results and sample identification are given in the attached table.

As noted there, the analyses were done using a gas chromatographic method specific for C_8 (Lab Method Number ES-567) but results have been reported as ppm F for comparison with total organic fluorine analyses. Precision is $\pm 10\%$ relative standard deviation over most of the concentration range, somewhat less at the lowest values. The lower limit for quantitation is 0.007 ppm F (0.01 ppm perfluorooctanoic acid), with a detection limit of ~ 0.004 ppm which can be distinguished from the reagent background but not well quantitated.

Please contact me (772-4440) or L. J. Papa (772-2745) if you have any questions regarding the analyses. General questions on blood sampling can be directed to J. W. Raines or L. F. Percival.

S. S. Stafford

Attachment
jah

Key Words:

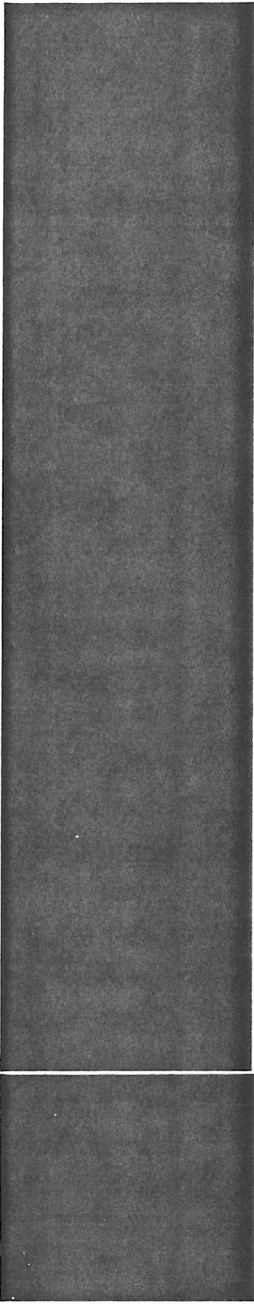
Perfluorooctanoic Acid
Perfluorooctanoate
Blood Analysis
GC

There's a world of things we're doing something about

EXP000037
EID713851

TABLE I

CONCENTRATION OF PERFLUOROOCTANOATE IN BLOOD (a)

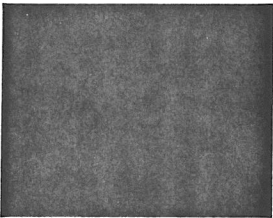
Sample				GC Analysis		(b)
PRAL No.	Date Sampled	P.R.No.	Name	Date Analyzed	[C ₈], $\mu\text{g F/g}$ blood	
81-2244	5/6/81	898		6/11/81	0.036	
81-2245	4/27/81	1084		6/11/81	0.022	
81-2246	4/27/81	992		6/11/81	0.022	
81-2247	5/6/81	357		6/12/81	0.030	
81-2248	4/28/81	983		6/12/81	0.027	
81-2249	5/11/81	923		6/12/81	0.033	
81-2250	4/28/81	1605		6/12/81	0.041	
81-2251	5/5/81	1544		6/15/81	0.012	
81-2252	4/28/81	1212		6/15/81	0.045	
81-2253	4/27/81	946		6/15/81	0.086	
81-2254	4/28/81	1538		6/15/81	0.056	
81-2255	5/7/81	3060		6/15/81	n.d.	
81-2256	4/27/81	2093		6/15/81	0.018	
81-2257	5/6/81	2457		6/15/81	<.007	
81-2258	5/7/81	1908		6/15/81	0.009	
81-2259	5/7/81	2542		6/15/81	n.d.	
81-2260	5/14/81	2151		6/16/81	0.016	
81-2261	5/14/81	2205		6/16/81	0.011	
81-2262	5/15/81	651		6/16/81	n.d.	
81-2263	5/7/81	3184		6/18/81	n.d.	
81-2264	5/18/81	1190		6/17/81	0.082	
81-2265	5/15/81	sal.		6/11/81	n.d.	
81-2266	5/15/81	1949		6/11/81	n.d.	
81-2267	5/14/81	1856		6/11/81	n.d.	
81-2268	5/6/81	2771		6/12/81	n.d.	
81-2269	5/14/81	sal		6/12/81	n.d.	
81-2270	5/7/81	1466		6/12/81	n.d.	
81-2271	5/7/81	sal		6/12/81	n.d.	
81-2272	5/7/81	sal		6/15/81	n.d.	
81-2273	5/14/81	pensioned		6/15/81	n.d.	
81-2274	5/7/81	sal		6/15/81	n.d.	

REDACTED

EXP000038
EID713852

TABLE I

CONCENTRATION OF PERFLUOROOCTANOATE IN BLOOD (a)

<u>Sample</u>				<u>GC Analysis</u>		(b)
<u>PRAL No.</u>	<u>Date Sampled</u>	<u>P.R.No.</u>	<u>Name</u>	<u>Date Analyzed</u>	<u>[C₈], μg F/g blood</u>	
81-2275	5/7/81	pensioned		6/15/81	n.d.	
81-2276	5/7/81	sal		6/16/81 & 6/18/81	0.027	
81-2277	5/7/81	2898		6/16/81 & 6/18/81	0.010	
81-2278	5/8/81	pensioned		6/17/81	n.d.	

(a) Analysis as described in Lab Method ES-567 ("Determination of Perfluorooctanoic Acid in Blood, Gas Chromatographic Method", S. Stafford, 4/3/81), using the packed column GC analysis with perfluoro-n-octanoic acid as calibration standard.

(b) Although the analysis is specifically for perfluorooctanoate (acid or salts), concentrations are given in ppm fluorine for comparison with the results of total organic fluorine analyses. ($\text{ppm F} = 0.688 \times \text{ppm perfluorooctanoic acid}$) Estimated uncertainty is $\pm 10\%$ relative standard deviation. The lower limit for quantitation is $0.007 \mu\text{gF/g}$. The detection limit is $\sim 0.004 \mu\text{gF/g}$, but concentrations in that range cannot be well quantitated and are reported as < 0.007 . None detected (n.d.) is reported for samples with $[\text{C}_8] \lesssim 0.004 \text{ ppm}$, which cannot be distinguished from reagent background.